OVERVIEW OF THE SIR-C/X-SAR GEOLOGY EXPERIMENTS

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Thirteen geology investigations are being conducted using data from SIR-C/X-SAR, aircraft, other spaceborne sensors and field observations. A broad range of geological phenomena arc under investigation, Including volcanic processes and hazards, aeolian processes including desertification, lithologic and structural mapping, and studies of past and current climate using analyses of paleodrainge, alluvial fan and glacial deposits. Geology studies were focused on several "supersite" target areas: volcanoes of the Galapagos Islands, Death Valley, California, regions of the High Andes and Altiplano, and hyperarid terrains of Northern Africa. These targets were imaged multiple times, using different radar viewing angles and polarimetric data modes. Radar data acquisition was supported by real-time observations and photography by the Shuttle astronaut crews, as well as by teams conducting field campaigns during the flights. In addition to the supersites, excellent data were acquired for dozens of other targets on six continents. These included 13 of the 15 Decade volcanoes identified by the volcanology community for special study during this decade because of potential threats to large neighboring populations. Several volcano targets were observed to undergo significant changes between, and in some cases *during,* the two 1994 flights of SIR-C/X-SAR. Extensive lahar deposits (mudflows) were emplaced in the communities surrounding Mt. Pinatubo in the Philippines just prior to the October flight, killing over 20 residents. The new deposits were clearly detected in comparisons of SIR-C images from April and October. Mount Kliuchevskoi on the Kamchatka Peninsula, Russia, experienced a major eruption during the October flight that was carefully monitored by the Space Shuttle crew using photographic, video and visual observations. Radar images show new deposits caused by pyroclastic and mud and debris flows on the volcano's flanks. At Kilauea, Hawaii, new lava flows were detected from eruptions occurring between flights and during the second flight. Interferometry data were used to characterize between-flight tectonic deformation on the south flank of Kilauea, as well as to identify surface changes associated with the eruptive activity in October. A number of geology targets were successfully acquired during the interferometry experiment. Topographic data derived from this experiment will be used in studies of tectonism, volcanism, glacialogy and hydrogeology.